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THE NEW ENGLAND BOTANICAL CLUB

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RUMEX THYRSIFLORUS NEW TO NORTH AMERICA

Áskell Löve and Doris Löve

In connection with his studies on the North American representatives of the genus *Rumex*, Rechinger (1937) predicted that the Eurasiatic species *Rumex thyrsiflorus* Fingerh. could be expected to occur on the North American continent. He concluded this from the fact that he had seen a single collection of the species from Haiti and it was unlikely that this plant from northern and eastern Europe and central Asia had been introduced only to this subtropical region in the New World. This prediction can now be verified, because the plant has been found by the present writers to be thoroughly naturalized in a restricted but rather wide area in and around Levis County on the southern shore of the St. Lawrence estuary opposite Quebec City, and on the eastern and southern parts of the Ile d'Orléans. The species grows in abundance near roadsides and in fields within this area, and it also occurs around Quebec City at least north to St. Joseph in the county of Charlevoix.

It was unfortunate that Rechinger (1937) did not study the *Rumex* material of the Marie-Victorin Herbarium of the University of Montreal when he made his investigations on the American species of the genus. Had he done so his prediction would have been superfluous since the herbarium already included four collections of the species from the province of Quebec and one from Ontario. The first of these collections from Quebec was made by Frère Marie-Victorin (No. 15764) on Ile d'Orléans on August 16, 1922, and on the label he remarks: "Partout dans les champs, St. Laurent de I'Ile d'Orléans et dans tous les

environs de Québec." The other three collections from Quebec available prior to the work of Rechinger were all collected within the same area east and west of the estuary, but a further collection, from St. Joseph in Charlevoix County, was made in 1937 by Bernard Boivin (Nos. 1068, 1125, 1126). Of course, all collectors regarded the plant as *Rumex Acetosa* only, and it was reported under that name by Marie-Victorin (1935).

It is evident from the occurrence of *Rumex thyrsiflorus* in the Quebec region that it is an old and very well established introduction, and it may even have been cultivated at some time (cf. Marie-Victorin, 1935). But although it was old near Quebec in 1922 when first observed by Frère Marie-Victorin, it may have been introduced much earlier in other regions, where it has probably not met the same ideal conditions for survival and dispersal. This suggestion is based on the fact that in the Marie-Victorin Herbarium is a specimen collected by J. Macoun in July of 1871 in Harting County in Ontario, where it grew "sparingly in meadows" at that time. And it has recently (1948) been collected from piles of stone and gravel near a ferry dock at St. Ignace in Mackinac County in Michigan by Rogers McVaugh (No. 9297). It is probably introduced occasionally to places having commercial connection with northwestern Europe.

Rumex thyrsiflorus belongs to the *Acetosa* subgenus, which, because of its morphological and biological distinctness, is often regarded as a genus of its own (cf. Löve & Löve, 1948; Löve, 1954). It is a dioecious plant of the section and subsection *Acetosa* (cf. Löve & Sarkar, 1956), closely related to the likewise introduced *Rumex Acetosa* L. and *Rumex ambiguus* Gren. and the indigenous *Rumex alpestris* (Scop.) Löve (cf. Löve, 1944, 1954). The distribution in Eurasia is definitely continental, although the taxon reaches oceanic regions in southern Scandinavia and the Netherlands in the west and in the Russian Arctic in the north (cf. Löve, 1944; Hultén, 1950; Lawalrée, 1953). According to Hultén (1950) the species belongs to the group of West-Siberian continental plants which have dispersed to Scandinavia via both the Baltic countries and Denmark, and it is not known to occur in most of France or in Britain.

Morphologically, the dioecious species of the section and sub-

section *Acetosa* are most easily distinguished from other American *Rumices* by their much enlarged fruit valves without grains, and the hastate or sagittate leaves. They are not easily confused with any of the two introduced or two indigenous species of the dioecious subgenus *Acetosella*, nor are they very similar to the other dioecious American representatives of subgenus *Acetosa*, namely the monotypic endemic southeastern subsection *Americanae* and the likewise monotypic western section *Paucifoliae* (cf. Smith, 1955; Löve & Sarkar, 1956). The valves are never much enlarged in *Acetosella*, which shares with *Americanae* the small and distinctly hastate leaves with rather large basal lobes clearly directed outwards and upwards, while the leaves of *Paucifoliae* lack basal lobes. All the species of the subsection *Acetosa*, however, are characterized by rather large cordate-oblong or spearshaped leaves with the relatively small basal lobes directed either downwards or slightly outwards.

Although Rechinger (1937) reported only one species of this group from North America and predicted the discovery of another, four species of the subsection *Acetosa* do actually occur on this continent. As shown by Löve (1944) and Hultén (1944), the circumpolar arctic-subarctic species *Rumex alpestris* (Scop.) Löve is indigenous in Greenland and in Alaska and the northern Rockies, and it is also met with in the Yukon Territory (D. Löve & Freedman, 1956). Probably all the plants of *Rumex Acetosa* from Alberta and British Columbia studied by Rechinger (1937) were in fact this indigenous species. The taxon is perhaps to be expected also from Labrador and Newfoundland and other subarctic and alpine areas in eastern North America, although the only specimen from the eastern alpine regions seen by the writers, which possibly could represent this species (from Nova Scotia), is doubtful. All other specimens from these regions seen by the writers belong, however, to the typical *Rumex Acetosa* from Eurasia. That taxon occurs occasionally as a waif here and there on the continent, but seems to be fairly well established, though not aggressive, in easternmost Canada and New England. It is abundant in some maritime localities rich in nitrogen in the Gaspé peninsula. *Rumex thyrsiflorus* is known only from the regions mentioned above, but the fourth species, *Rumex ambiguus* Gren., is a garden

plant in a few places in eastern Canada and occasionally escapes cultivation. It is widely cultivated in Europe, especially in France, from where it may have been introduced as a vegetable long ago.

The species *Rumex thyrsiflorus* is characterized by a very thick and long and strong tap-like rootstock, from which a large rosette of leaves and a great number of stems emerge. The stems are usually about 80–100 cm. tall, varying between the extremes 40 and 160 cm. depending on the conditions, and the female plants, which always predominate in number, are on the average 20–40 cm. taller than the male individuals. The ochrea on the stem is laciniate. The leaves on the stem are usually narrower and shorter than the basal leaves, but the latter are always much narrower in *Rumex thyrsiflorus* than in the other species of the group, varying between four and fourteen times longer than broad, narrow lanceolate and practically spearshaped, thick and dark green and frequently with crispate margins. Their basal lobes are rather long and narrow and protrude outwards and downwards. The inflorescence is repeatedly branched and forms a dense tuft. The fruit valves are about 3–4 mm. long, i.e. distinctly smaller than in the other species of the subsection, only slightly colored by anthocyanin before maturing, and the achene is shining dark brown. Cytologically, the species is similar to the other related taxa as to its number of chromosomes, $2n=14$ in the females and 15 in the males, the differences being caused by the peculiar sex chromosomes, XX in the females and XYY in the males. There are, however, slight morphological differences between the autosome complements in all the species, a fact to be reported in detail elsewhere.

The separation of the four species met with on this continent may be facilitated by aid of the following key of their essential differences:

A. The ochrea entire, or laciniate only in its upper part on mature specimens. An early flowering northern plant with a simply branched panicle with usually strongly reddish colored valves about 4–5 mm. long. The leaves are one to six times longer than broad, rarely almost circular, with the basal lobes directed downwards and inwards; plants with small, thick, and dark green or reddish leaves are typical of exposed places or high-alpine habitats, while in more protected localities the

leaves are large and thin and light green. **Rumex alpestris** (Scop.) Löve (Syn.: *Lapathum alpestris* Scop., *Rumex arifolius* auct., *Rumex montanus* Desf.).

A. The ochrea laciniate also on young stems.

B. Early flowering plants with a simply branched panicle and only slightly colored valves about 4–5 mm long. The leaves are dark green and fairly thick, two to six times longer than broad, with the basal lobes directed downwards..... **Rumex Acetosa** L.

B. Later flowering plants with a repeatedly branched and usually very dense panicle. The rootstock is very thick and reaches deep down into the soil.

C. Leaves very large and thin and light green, two to four times longer than broad, with the basal lobes directed downwards and inwards..... **Rumex ambiguus** Gren. (Syn.: *Rumex Acetosa hortensis*)

C. Leaves very long and dark green, at least four and up to fourteen times longer than broad, distinctly spearshaped with the basal lobes directed outwards..... **Rumex thyrsiflorus** Fingerh.

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NOTES ON FLOWERING PLANTS IN MINNESOTA

John W. Moore

ALIEN PLANTS: There has been a steady increase in the number of alien plants found growing in Minnesota in woods, along waysides, and in fields and meadows. Some of these may be garden escapes, now well established, while others may be weedy plants of European origin that have appeared recently in Minnesota.

To the known occurrences of **Anthriscus sylvestris** (L.) Hoffman in Newfoundland, Quebec, New Jersey, and New York, Minnesota can now be added. This woodland species was brought in for determination in May 1955 by Francis L. McGuire. An ample series of fruiting specimens was prepared on June 9, 1955 (*J. W. Moore 22574*) from the same extensive patch on the old quarry bank west of the Health Service Building on the University of Minnesota Campus, Minneapolis.

Atriplex glabriuscula Edmonston was obtained on September 21, 1954 by J. W. Moore and G. B. Ownby (*22210*) while on a collecting trip in southwestern Minnesota. This Orach was found in a hay meadow at Pipestone, Pipestone County.

Carduus acanthoides L. thus far has been found only in Becker and Rock Counties. Dr. G. B. Ownbey and Mrs. Ownbey obtained it for the first time in Minnesota while they were making extensive collections of thistles in 1949. The Becker County locality is in an over-grazed pasture 6.2 miles southwest of Lake Park (*G. B. Ownbey and Findley Ownbey 1190*, Aug. 6, 1949). The first Rock County locality is along the roadside near Magnolia (*G. B. Ownbey and Findley Ownbey 1266*, Sept. 4, 1949); a second collection from Rock County was made in a pasture at the Blue Mounds north of Luverne (*J. W. Moore and G. B. Ownbey 22742*, Aug. 7, 1955).

Centaurea montana L. was collected on the flanks of Hunter's Hill, Duluth, St. Louis County (*Olga Lakela 10563*, 1950).

Onopordon acanthium L., the Scotch Thistle, was procured from a colony of plants along a fence row near Edgerton, Pipestone County (*J. W. Moore and G. B. Ownbey 22251*, Sept. 21, 1954). The Scotch Thistle was reported by Warren Upham in his Catalogue of the Flora of Minnesota, p. 88, 1884, where its occurrence as rare at Lake City (Wabasha County), as noted by Mrs. J. W. Ray, is given. In 1891 Conway McMillan reported this plant in the Minnesota River Valley (Rev. Gen. de Bot., **3**: 291). No other reports of it have been found in the literature and no specimens have been deposited in the Herbarium of the University of Minnesota until now.

Pentstemon Digitalis (Sweet) Nutt., has been found in Pine County, near Sandstone (*N. L. Huff*, 1942), and near Hinkley (*F. K. Butters and J. W. Moore 10889*, 1939, and *Chas. A. Fuller*, 1941).

In 1954, some two weeks previous to a botanizing trip to southwestern Minnesota by G. B. Ownbey and J. W. Moore, our good friend and fellow botanist, Prof. O. A. Stevens of the North Dakota Agricultural College, Fargo, North Dakota, had collected in contiguous territory. He had botanized in parts of Pipestone County including the Pipestone National Monument. His generous gift of plants to the Herbarium of the University of Minnesota has made it possible to report some of the plants he found there at that time. **Rumex domesticus** Hartm. (*O. A. Stevens 1511*, Sept. 14, 1954) was growing in depressions by the middle outcrop (of Sioux Quartzite), Pipestone National Monument; **Rumex odontocarpus** Sandor ex Borbos (the *Rumex alluvius* of Gates and McGregor, Trans. Kansas Acad. Sci. **53:** 186, fig. 187, 1950) was found growing in a saline slough ¾ mile south of Louisburg, Lac Qui Parle County (*Stevens 1513*, Sept. 16, 1954) and in a saline ditch near Rabbit River, Wilkin County (*Stevens 1514*, Sept. 17, 1954). In 1948 Prof. Stevens secured specimens of **Sisymbrium Loeselii** L. from Minnesota for the first time. This potentially aggressive weed was gathered in woods along the Red River of the North adjacent to a truck farm where it was said to be frequent (*Stevens 1057*, Sept. 11, 1948). There is also an extant collection of Loesel's Hedge Mustard from Bigstone County. This is from the banks of the Minnesota River at Ortonville (*J. W. Moore 20521*, June 5, 1950.

Veronica longifolia L., collected by Dr. Olga Lakela (Lester Park, Duluth, *13598*, 1951), has been found growing spontaneously in two other counties in Minnesota. Collections of this *Veronica* in the Herbarium of the University of Minnesota in addition to the Lakela specimen are from a point along the Red Cedar River at Austin, Mower County (*J. W. Moore and N. L. Huff 18666*, 1946) and from a woods in the vicinity of cottages at Pelican Lake, Ottertail County (*O. A. Stevens 1463*, 1953).

NATIVE PLANTS: Seemingly the following native plants have not been reported from Minnesota up to the present time.

Carex hystricina Muhl. forma **Dudleyi** (Bailey) Wieg. was found growing along the shore of Wall Lake in Ottertail County (*J. W. Moore 20414*, July 6, 1949) in association with *Juncus Dudleyi* Wieg. *Asclepias incarnata* L., and other marsh species.

Carya ovata (Mill.) K. Koch var. **Nuttallii** Sarg. was discovered in Minnesota for the first time by Dr. Clarence E. Mickel of the Department of Entomology and Economic Zoology of the University of Minnesota. The stand is in Houston County, Minnesota. It is made up of some half dozen trees 12–18 inches in diameter in a woodland on the south side of the Winnebago Valley, 8 miles northwest of New Albin, Iowa. On Oct. 14, 1954, in company with Dr. Mickel, Dr. Donald B. Lawrence, Mrs. Lawrence, and Mrs. Helen Allison, the author made a trip to the site to secure collections for a permanent herbarium record. The forest was made up of oak, maple, basswood, bitternut hickory, and typical shagbark hickory. The variety at this place seemed distinct from

Carya ovata by its smoothish bark and characteristic smaller, compressed nuts. The collections representing variety *Nuttallii* (*22438*, *22439*) were made by the party.

Cerastium brachypodum (Engelm.) Robinson was found in Cottonwood County, SW ¼, Sect. 5, Delton Township (*J. W. Moore and J. W. Post 16933*, May 29, 1944); and from the same county, growing in a prairie strip along the railroad, ½ mile west of Bingham Lake (*J. W. Moore 16998*, May 31, 1945); it was also found growing at the Pipestone Quarry, Pipestone National Monument (*J. W. Moore and Robert B. Hall 16395*, June 10, 1944); and on rock outcrops 4 miles west of Courtland, Nicollet County (*J. W. Moore and N. L. Huff 18511*, June 6, 1946).

Physalis macrophysa Rydb. is abundant at Fort Ridgely State Memorial Park, Nicollet County. Specimens were procured from creek bottom lands (*J. W. Moore and N. L. Huff 19785*, Aug. 28, 1947).

NAME TRANSFERS: **Astragalus striatus** Nutt. forma **Chandonnettii** (Lunell) stat. nov. based on *Astragalus Chandonnettii* Lunell, Am. Midland Nat. **2:** 127, 1911.

On June 16, 1911 Z. L. Chandonnett collected a white flowered *Astragalus* in dry soil in a railroad yard at McHugh, near Detroit Lakes, Becker County. The plant was sent to Dr. J. Lunell of Leeds, North Dakota. Dr. Lunell published a description of the plant in the American Midland Naturalist in 1911. He called it *Astragalus Chandonnettii*. A study of the type proves that is is an ochroleucous form of *Astragalus striatus* Nutt. The type is deposited in the Herbarium of the University of Minnesota (accession number 254878).

Carex turgida (Fernald) stat. nov., based on *Carex amphibola* Steud. var. *turgida* Fernald, Rhodora **44:** 311, 1942. *Carex grisea* of authors not Wahl.

This is a new name for *Carex grisea* of American authors not *Carex grisea* Wahlenberg, Svensk Vet. Akad. Nya Handl. **24:** 154. 1803. The Wahlenberg name is discussed in detail by the late Prof. Fernald in Rhodora **44:** 312, 1942, in his Critical Notes on *Carex*. Prof. Fernald's designation, on page 311, of our American entity as *Carex amphibola* var. *turgida* Fernald places it with its kinship but the diagnostic characters seem to me to warrant specific status. The type selected by Prof. Fernald was collected on open alluvial and marshy flats between Fall Creek, East Hill and Cayuga Lake, Ithaca, New York, June 15, 1914 (*Wiegand and Thomas 1915*). The type sheet is in the Gray Herbarium.

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A CONSPECTUS OF THE GENUS OENOTHERA IN EASTERN NORTH AMERICA

R. Ruggles Gates

The genus *Oenothera* has been largely neglected by taxonomic botanists, apparently because of the difficulty in recognizing some of the characters in herbarium specimens. When studied in the wild, however, a great range of variation is observed, and when grown in cultures these differences are found to be practically all genetic. The few species recognized by the older taxonomists are therefore shown to be a very inadequate treatment of the genus and the immense amount of variability it contains.

In a monograph published twenty years ago (Gates 1936), many new species and varieties of *Oenothera* were described after growing them in cultures for three generations. Each culture was very uniform except for occasional trisomic or tetraploid mutations, and they bred true from year to year. Subsequent intensive study of many new seed collections from different parts of eastern North America confirmed in the main the earlier judgments and has led to wider views of the geographical distribution of the forms concerned. The cultures from new localities nearly all fit into the categories already described, so it has been necessary to create very few additional species or varieties in the region of eastern North America.

In order to avoid the multiplication of species, a number of the species originally described have here been reduced to varietal rank by attaching them to the particular species to which they are clearly related.

These forms all have a ring of 14 chromosomes and breed true because of the catenation and the presence of balanced lethals. Each strain thus contains two complexes, which are often surprisingly unlike, as shown in crosses with other forms.

Some time ago I examined all the *Oenothera* collections in the Gray Herbarium and found that many of them were clearly referable to species or varieties already described in the above monograph. This extends the known distribution of many forms.

It seemed desirable to make a conspectus of these forms, with

their known localities, as shown below. Under each species or variety described by me is given first the type locality, then other localities from which cultures have been grown (the cultures continuing for three generations, each generally containing at least 35 plants). This is followed by the words "Gray Herb." and then by the localities from which specimens in the herbarium have been identified, with the date when they were collected. In certain other species which I have not grown in culture only Gray Herbarium specimens are cited. And in certain more western and southern forms only the general area of distribution is given. The status of some of these species is still uncertain.

An extensive monograph of *Oenothera* is in course of preparation, including an intensive study of various local populations and a consideration of evolution in the family *Onagraceae*. This list of species, with the localities where they have been found, will serve as an indication of the geographic distribution of the various forms.

As the genetics of Oenothera is in some respects unique, a word may be added here regarding the evolution of the genus in North America. Various statements on this subject have been published by me in the last forty years. Beginning with a few large-flowered open-pollinated species surviving in the South, a series of dominant mutations for successively smaller flowers has occurred as the genus moved northwards after the Ice Age. The northward movement was accompanied by the development of chromosome catenation, beginning with a ring of four chromosomes and ending with a complete ring of 14. This was accomplished by an exchange of chromosome ends between certain non-homologous chromosomes. The appearance of balanced lethals in the meantime produced plants which bred true although highly heterozygous. And since the small-flowered species were self-pollinating, each such form might be expected to breed true indefinitely. However, this condition is disturbed by (1) the appearance of mutations, (2) the occurrence of very occasional crosses between different forms where they overlapped in distribution. On the other hand, certain species such as *Oenothera missouriensis* and *Oenothera organensis* retained seven free pairs of chromosomes but

developed a series of self-sterility factors which prevented too much inbreeding. By such mechanisms has developed, in the last 10,000 years or so, the great multiformity of forms now spread over the continent. This can only be regarded as an example of extremely rapid evolution.

DISTRIBUTION OF OENOTHERA (EUOENOTHERA) IN NORTH AMERICA

Oe. novae-scotiae Gates. Middleton (Annapolis Co.), N. S. Annapolis Valley. Tryon and Ellerslie, P. E. I. GRAY HERB.: Beaver River (Yarmouth Co.), N. S., 1920.[1] Tignish and Alberton (Prince Co.), Mt. Albion and Charlottetown (Queens Co.), P. E. I. Var. **intermedia,** comb. nov. (*Oe. intermedia* Gates, Phil. Trans. Roy. Soc. **B226:** 266–268. 1936.) Bear River (Digby Co.), N. S. GRAY HERB.: Meteghan (Digby Co.), N. S., 1920. Var. **distantifolia** Gates. Kentville (Kings Co.), Newport (Hants Co.), N. S. Var. **serratifolia** Gates. Kentville, N. S. GRAY HERB.: Kingsport, N. S., 1901.

Oe. comosa Gates. Wilmot (Annapolis Co.), N. S.

Oe. Hazelae Gates. Lockeport (Shelburne Co.), N. S., and along the south coast to Halifax. Wentworth (Cumberland Co.) and shore of Minas Basin from Advocate Harbour to Five Islands and North River and from Tennycape to Upper Burlington (Hants Co.), N. S. GRAY HERB.: Port Mouton, 1920.[2] Var. **parviflora** Gates. Middleton. Port George on the Bay of Fundy, Port Mouton (Queens Co.) to St. Margaret's Bay, Frayle's Cove and Chester (Lunenburg Co.), Herring Cove, Hubbard and Hubley (Halifax Co.), N. S. Var. **subterminalis,** comb. nov. (*Oe. subterminalis* Gates, Phil. Trans. Roy. Soc. **B226:** 278–281. 1936.) Higgins Brook and Wentworth (Cumberland Co.), North River (Colchester Co.). GRAY HERB.: Five-mile River (Hants Co.), 1920.[3]

Oe. grandifolia Gates. Wentworth and Port Howe (Cumberland Co.), Waugh's River (Colchester Co.), N. S. Point de Bute (Westmoreland Co.), N. B. Related forms were grown from East River Point and Blockhouse (Lunenburg Co.) and Halifax, N. S.

Oe. ammophiloides Gates and Catcheside. Guysborough, N. S. and down the coast to Aspatogan and head of St. Margaret's Bay (Lunenburg Co.). Var. **flecticaulis** comb. nov. (*Oe. flecticaulis* Gates, Phil. Trans. Roy Soc. **B226:** 269–272. 1936.) Mouth of Lahave River and Mill Cove (Lunenburg Co.), N. S. Var. **laurensis** Gates. Port Elgin and Cape Tormentine (Westmoreland Co.), N. B.; Matapedia, Carleton and New Carlisle, (Bonaventure Co.), Cape Gaspé and Mont St. Pierre (Gaspé Co.), Les Escoumains (Saguenay Co.) and Lake Temiskaming, Quebec. GRAY HERB.: Matapedia, 1928–1929; Carleton, 1904; Little Cascapedia,

[1] The Beaver River specimen differs in having red papillae on the buds.

[2] This specimen has petals ca. 15 mm., midleaf 6.5 cm. × 10 mm. In my cultures the midleaf was 11–15 cm. × 30–38 mm., showing the effects of cultivation on leaf-size.

[3] This specimen differs in having no red papillae on the stem.

1930; Paspebiac Lighthouse, 1902; Manche d'Epée, 1930; Ste. Anne des Monts, 1905; Matane, 1904: Little Metis, 1906; Rivière du Loup, 1913; Mingan Ids, 1924. There are also specimens from Tignish and Cape Aylesbury (Prince Co.) and Wood Island (Queens Co.), Prince Edward Island; and a form in w. Newfoundland (1929) differs mainly in having buds diffuse red with few red papillae.[4] Var. **parva** comb. nov. (*Oe. parva* Gates, Phil. Trans. Roy. Sec. **B226:** 296–300. 1936.) From Mont St. Pierre (Gaspé Co.) to Bic (Rimouski Co.) and L'Islet (L'Islet Co.), Quebec. Gray Herb.: Bic, 1904; Gaspé Mountain, 1927; Anse Pleureuse, Gaspé, 1928; Mont St. Pierre, 1932. A narrow-leaved variety with petals 10 mm. long occurs at St. Joachim (Montmorency Co.), Dolbeau (Lac St. Jean Co.) and Ile aux Coudres (Charlevoix Co.), Quebec.

Oe. magdalena Gates, (1951). Magdalen Islands.

Oe. sackvillensis Gates. Sackville (Westmoreland Co.), N. B. Var. **albiviridia** Gates. Sackville (Westmoreland Co.) N. B. Var. **Royfraseri** comb. nov. (*Oe. Royfraseri* Gates, Phil. Trans. Roy. Soc. **B226:** 285. 1936). Sackville (Westmoreland Co.), N. B. Gray Herb.: McAdam Junction, N. B. 1916.

Oe. leucophylla Gates. St. Vallier (Bellechasse Co.) and Bethier-en-bas (Montmagny Co.), Que.

Oe. biformiflora Gates. South bank of St. Lawrence from St. Roche des Aulnets (L'Islet Co.) to St. Vallier, Charny (Levis Co.) and St. Antoine les Fonds (Lotbinière Co.), north bank at Wolfe's Cove, Quebec City, Richer and Ste. Anne-de-Beaupré (Montmorency Co.), Que. Var. **cruciata** Gates. Quebec.

Oe. Victorinii Gates and Catcheside. Ste. Anne (Kamouraska Co.), Que., Montreal, St. Hubert (Chambly Co.) and Laniel (Temiskaming Co.), Que.; Jordan (Lincoln Co.) and Colchester (Essex Co.), Ontario; Piseco, New York. Var. **parviflora** Gates. Ste. Anne (Kamouraska Co.), St. Antoine (Lotbinière Co.), Three Rivers, St. Vallier, Mistassini (Lac St. Jean Co.), Quyon (Pontiac Co.), Que.; Vineland (Lincoln Co.), Ont.; Piseco, New York. Gray Herb.: Ancienne Lorette, 1928; Piscataquis River Valley, Me., 1897; Willoughby, Vt., 1896 (petals ca. 20 mm). Var. **intermedia** Gates. St. Vallier (Bellechasse Co.), Ste. Anne de Bellevue (Jacques Cartier Co.), Cap Tourmente (Montmorency Co.), Que. Var. **undulata** Gates. York Mills Road, near Toronto, Ont. Gananogue (Leeds Co.), Fitzroy (Carleton Co.), Ont. Thurso (Pâpineau Co.), Que.

Oe. angustissima Gates. Ithaca, New York. Gray Herb.: Springport (Cayuga Co.), 1918, Lansing (Tompkins Co.), 1918, 1919; Hudson Falls (Washington Co.) 1896 and Ithaca Lake Shore near Estys, 1920, all in New York. Var. **quebecensis** Gates. Cap Tourmente, Que.

Oe. apicaborta Gates (1951). Les Piles (Champlain Co.), Que.

[4] These all have many red papillae on the sepals and stem; ovary 8–11 mm, hypanthium 20–25 mm, bud cone 11–20 mm, sepal tips 2–4 mm. The variety thus extends around the whole Gaspé coast. The leaves are ca. 6–7 cm × 8 mm, much smaller than in cultures (1.9–27 cm × 30–38 mm).

Oe. argillicola Mackenzie. White Sulphur Springs, W. Va., Va., Md. and N. Y. GRAY HERB.: Alleghany Co., 1946, and Botetourt Co., W. Va. (petals 32 mm.) Covington, Va., 1947 (petals. 35 mm.); Deerfield (Augusta Co.), Va. (petals 20 mm.) A related specimen in Gray Herbarium from Bedford Co., Pa., 1942, has petals ca. 12 mm. long.

Oe. grandiflora Soland. Dixie Landing, Tensaw, Alabama, (Gates 1915, p. 13). Var. **Tracyi** (Bartl.) comb. nov. (*Oe. Tracyi* Bartl. Rhodora **13:** 210. 1911.) Dixie Landing and Birmingham, Alabama.

Oe. laevigata Bartl. White Sulphur Springs, W. Va., and Alleghanies. Var. **scitula** (Bartl.), comb. nov. W. Va. (*Oe. scitula* Bartl. Cyb. Columb. **I:** 45. 1914). Var. **similis** Gates. St. Vallier, Que. Var. **rubripunctata** Gates. St. Vallier, Les Escoumains (Saguenay Co.), Que.

Oe. venosa Sh. & Bartl. New York.

Oe. eriensis Gates. Colchester Beach (Essex Co.), Ont.; Collingwood (Grey Co.), and Wasaga Beach on Lake Huron (Simcoe Co.), Ont.; Lake Temiskaming, Que. Var. **repandodentata,** comb. nov. (*Oe. repandodentata* Gates, Phil. Trans. Roy. Soc. **B226:** 328–332. 1936.) Colchester, and Colborne (Northumberland Co.), Ont. Var. **niagarensis,** comb. nov. (*Oe. niagarensis* Gates, Phil. Trans. Roy Soc. **B226:** 326–328. 1936.) Niagara Gorge, N. Y., and St. Eustache (Two Mountains Co.), Quebec.

Oe. deflexa Gates. Windsor, Ont. and vicinity, Quyon (Pontiac Co.), Montreal Island, Grenville (Argenteuil Co.), Que. GRAY HERB.: Wentworth Co., Ont., between Dundas and Hamilton, 1940 (petals 6 mm.). Var. **bracteata** Gates. Sandwich and Riverside Drive (Essex Co.), Ont.

Oe. pycnocarpa Atk. & Bartl. Ithaca, N. Y.; Long Island, N. Y.; Vineland (Lincoln Co.), Ont. GRAY HERB.: Oxford, Conn., 1896; Westerly, R. I., 1912; Canton, N. Y., 1914; Ithaca, N. Y., 1915; Tioga Co., N. Y., 1915; Centre Co., Pa., 1915; Canaan Valley, Tucker Co., W. Va. (alt. 900–1200 m.), 1945. Var. **parviflora** Gates. Hamilton and Georgetown, N. Y. Var. **cleistogama** Gates. Clinton, N. Y.

Oe. cleistantha Sh. & Bartl. New York.

Oe. nutans Atk. & Bartl. Ithaca, N. Y. GRAY HERB.: Glen Falls Rd., Warren Co., N. Y.; Garrett Co., Md.; Rappahannock River, Va.; Sussex Co., Va.; Dinwiddie Co., Va.

Oe. atrovirens Sh. & Bartl.[5] (*Oe. cruciata* deV.) Hudson Falls, N. Y. Var. **Ostreae,** comb. nov. (*Oe. Ostreae* Sturt. Zeits f. Abst. u. Vererb. **59:** 367. 1931.) Oyster Pond, Falmouth, Mass.

Oe. cruciata Nutt. GRAY HERB.: Somerset, Me.[6]; Cornish, Me., 1891; Cumberland, Me., 1903; Rollingsford, N. H., 1896; Surry, N. H., 1900; Dublin, N. H., 1897; Brattleboro, Vt.; Vernon, Vt.; Cape Ann, Mass.; Northhampton, Mass.; Axton (Adirondacks)[7]; Granville, N. Y.; Marine

[5] Renner (1943) has worked out the lethal and sublethal factors in the *flectens* pollen complex of this species.

[6] Ovary 8–10 mm., hypanthium 28 mm., bud cone yellow, 11 mm., sepal tips 3 mm., subterminal, petals 10 mm., cruciate, midleaf 7.5 cm × 14 mm.

[7] Differs in having a red stem with red papillae.

City, Mich. Var. **sabulonensis** Fernald. Sable Island, 1913 (type)[8]; J. Macoun, Sable Id., 1899. Var. **stenopetala** (Bickn.) Fern. Nantucket, 1906.

Oe. Robinsonii Bartl. New Hampshire.

Oe. stenomeres Bartl. Maryland.

Oe. brevicapsula Bartl. Chevy Chase, Md.

Oe. paralamarckiana Gates. Penzance, Woods Hole, Mass.

Oe. rubescens Bartl. Nantucket Island, Mass.

Oe. Oakesiana S. Wats. Falmouth and Nantucket, Mass.; New Haven, Conn.; Long Island, N. Y. Gray Herb.: Provincetown and Falmouth, Mass.; Bridgeport, Conn. Var. **Nobska** (Sturt.), comb. nov. (*Oe. Nobska* Sturt. Zeits. f. Abst. u. Vererb. **59:** 367. 1931.) Nobska Point, Woods Hole, Mass. Var. **Tidestromii** (Bartl.), comb. nov. (*Oe. Tidestromii* Bartl. Cyb. Columb. **1:** 54. 1914.) Tatuxent River (St. Mary's Co.), Md.

Oe. Shulliana Sturt. Morristown, N. J.

Oe. canovirens Steele. Illinois. (Nantucket and Manhattan Island.) Gray Herb.: Urbana, Ill.; Morgan Co., Champaign Co., Ill. Var. **cymatilis** (Bartl.), comb. nov. (*Oe. cymatilis* Bartl.) Cyb. Columb. **1:** 54. 1914.) Sawyer, (Berrien Co.), Michigan.

Oe. chicaginensis Renner. Chicago, Illinois.

Oe. furca Boedijn. North Town Junction, Minn.

Oe. disjuncta Boedijn. North Town Junction, Minn.

Oe. insignis Bartl. Duluth, Minn.; Saskatoon, 100 mi. north of Saskatoon and Waskesiu, Sask.; Prince Albert, Alta.; Osoyoos Lake, B. C.[9]; Burt, near Moose Jaw, Sask.; Luskville (Hull Co.), St. Jerome (Terrebonne Co.), and Riviere Blanche (Matane Co.), Que.

Oe. perangusta Gates (1950). Stokes Bay, Bruce Peninsula, Ont. Gray Herb.: Stokes Bay, Dunk's Bay and Queenleen Lake, Bruce Peninsula, Lake Huron, Ont.; Temagami Id., in Lake Temagami, Ont.; Algoma Dist., Ont.; Port Colborne, Ont.; Jackfish,[10] Selin, Ravine Lake, Sleeping Giant, Marie Louise Creek and Mazokama Bay in Thunder Bay District, Ont.; Pike Bay, Cass Lake, Minn.; Red Deer Valley, near Rosedale, Alta.; Sandy Creek, Oswega Co., N. Y.; Ridgeway, Elk Co., Penn. Var. **rubricalyx** Gates (1950). Gray Herb.: Jackfish, Thunder Bay Dist., Ont., 1933 (Type). Herb. Univ. British Columbia: in sand ballast on railway, Heron Bay, Ont., in vicinity of peninsula about Lat. 48° 45′ N. Long. 86° 15′ W., *Taylor, Bennan and Harrison*, 1939.

Oe. strigosa (Rydb.) Mack. & Bush. Minn. to Wash., Utah, Kans., N. Mexico. Introduced on Nantucket Id., Mass. Gray Herb.: Big Timber Creek (Sweetgrass Co.), Mont., 1945; Twilight Gulch (Owyhee

[8] Ovary 8 mm., hypanthium 25 mm., bud cone 7 mm., sepal tips 1–2 mm., petals *ca.* 10 mm., cruciate, midleaf 8.3 cm. × 16 mm.

[9] From seeds collected by Prof. John Davidson.

[10] In 1953, I visited Jackfish and found the original station of the red mutation, a patch of 8 plants, all red but one. In 1954 I found the species (with green buds) very uniform along the north shore of Lake Superior from Schreiber to Heron Bay, Ont., and beyond, but no other red mutations.

Co.), Idaho, 1910; Wyoming, 8200 ft. alt. Var. **albinervis,** comb. nov. (*Oe. albinervis* Gates, Phil. Trans. Roy. Soc. **B226:** 339–343. 1936.) Fargo, Kindred and Barrie, N. Dakota. Var. **procera** (Woot. & Standl.), comb. nov. (*Oe. procera* Woot. & Standl. Contr. U. S. Nat. Herb. **16:** 156. 1913.) Winsor Creek, Pecos National Forest, N. Mex.; Arizona and s. Colorado. Var. **cheradolphila** (Bartl.) comb. nov. (*Oe. cheradolphila* Bartl. Bot. Gaz. **44:** 302. 1907.) Washington and Wyoming. Var. **Cockerellii** (Bartl.), comb. nov. (*Oe. Cockerelli* Bartl. ex DeVries, Gruppenweise Artbildung, p. 56. 1913.) Colorado. Var. **subulifera** (Rydb.), comb. nov. (*Oe subulifera* Rydb. Bull. Torr. Bot. Club **40:** 66. 1913.) (*Onagra strigosa subulata* Rydb. Mem. N. Y. Bot. Gard. **1:** 279. 1900.) Montana.

Oe. depressa Greene. Custer, Montana. Annual.

Oe. rubricapitata Gates. Kindred, N. Dakota.

Oe. Macbrideae (Nelson) Heller. Twilight Gulch, Idaho. Gray Herb.: Corral (Blaine Co.), Idaho; Rowland, Nevada, 1912. (Fig. 6, Gates, 1915, p. 31.) Var. **ornata** (Nelson), comb. nov. (*Onagra ornata* Nelson, Bot. Gaz. **52:** 268. 1911; *Oenothera ornata* (Nelson) Rydb. Bull. Torr. Bot. Club **40:** 66. 1913.) Gray Herb.: Boise, Idaho, 1910, 1911.

Oe. Jamesii Torr. & Gray. Texas, New Mexico. Gray Herb.: Sonoita Valley, Ariz., 1874 (petals *ca.* 35 mm.).

Oe. longissima Rydb. Utah, Armstrong and White Canyons.

Oe. organensis Munz. Organ Mountains, New Mexico.

Oe. macrosiphon Woot. & Standl. Contr. U. S. Nat. Herb. **16:** 156. 1913. Not *Oe. macrosiphon* Lehm. in Hamb. Gardenz. **14:** 439. 1858.

Oe. macrosceles A. Gray. Northern Mexico.

Oe. Heribaudii Lev. Mexico, near Puebla.

Oe. Hookeri Torr. & Gray. Mex., N. Mex., Calif., s. Colorado. Gray Herb.: Lake Merced, Calif.; Walker's Basin, Calif., 1875 (petals *c.* 60 mm., midleaf ca. 10 cm. × 18 mm.); Klickitat Co., Columbia River, Wash., 1906. Var. **angustifolia** Gates, var. nov. (*Oe. Hookeri* var. *angustifolia* Gates, nom. subnud., Mutation Factor in Evol. 30. 1915.) A specie differt, folia angustiora (8–12 mm. lata), subintegra et perobscure denticulata, caulibus gracilibus, claris rubris. Asphalt, Utah, 1894 (Brit. Nat. Hist. Mus.). Gray Herb.: Smoky Valley, Nev., 1865; Parrott, Colo., 1898; Clark Co., Nev., 1938; Fort Tejon, Calif., 1857; Sisson, Siskiyou Co., Calif., 1912; Klamath Co., Ore., 1936; w. Texas to El Paso and New Mex., 1849, etc. Var. **hirsutissima** (Gray), comb. nov. (*Oe. biennis* var. *hirsutissima* A. Gray, Mem. Amer. Acad. **4:** 43. 1849. *Oe. hirsutissima* Rydb. Bull. Torr. Bot. Club **40:** 66. 1913.) Type from New Mex.; also Colo. Gray Herb.: Hamilton Co., Kans, 1893; Coconino Co., Ariz., 1934; Brewster Co., Tex., 1936; Santa Fe Canyon, New Mex., 1897; New Mex., 1847, etc. Var. **irrigua** (Woot. & Standl.), comb. nov. (*Oe. irrigua* Woot. & Standl. Contr. U. S. Nat. Herb. **16:** 155. 1913.) New Mexico. Gray Herb.: Colfax Co., N. Mex., 1934 (7500 ft.); Linda Vista, N. Mex., 1934; Las Cruces, New Mex., 1935; Fort Davis Mts., Tex.; Salt Lake Co., Colo., (6000 ft.),

1934. Var. **Hewettii** (Cockerell), comb. nov. (*Oe. Hewetti* Cock. Gard Chron. **65:** 39. 1919.) Rito de los Frijoles, New Mexico. Var. **parviflora** Gates. Kamloops, B. C. 1889 (British Mus. Nat. Hist.). Var. **Simsiana** (Ser.) comb. nov. (*Oe. Simsiana* DC. Prodromus **3:** 47. 1828.) Mexico. Var. **franciscana** (Bartl.), comb. nov. (*Oe. franciscana* Bartl. Rhodora **16:** 35. 1914.) Carmel Beach, California. Var. **venusta** (Bartl.), comb. nov. (*Oe. venusta* Bartl. Rhodora **16:** 36. 1914.) San Bernardino Co., Calif. Gray Herb: Los Angeles Co., Calif., 1903; Yosemite Valley, Calif., 1911; San Bernardino Valley, 1919; Orange Co., Calif., 1938; Mather, Calif., 1936. Var. **grisea** Bartl. San Bernardino Co. Gray Herb.: San Diego, Calif., 1875; San Diego Co., 1888, 1916; San Bernardino, Calif., 1896; Orange Co., Calif., 1936.

Oe. Reynoldsii Bartl. Knoxville, Tennessee.

Oe. pratincola Bartl. Lexington, Kentucky. Var. **numismatica** (Bartl.), comb. nov. (*Oe. numismatica* Bartl. Cyb. Columb. **1:** 41. 1914.) Lexington, Ky.

Oe. muricata L. Holland (Introduced). Var. **canescens** (Torr. and Gray) Robinson.

Oe. syrticola Bartl. (= *Oe. muricata* deV.) Woods Hole, Mass.; Orange, Conn. Var. **litorea** (Bartl.), comb. nov. (*Oe. litorea* Bartl. Cyb. Columb. **1:** 48. 1914.) Orange, Conn. A red-nerved form named by Renner from Venice, Italy, belongs with this species.

Oe. ammophila Focke. Bremen, Germany and Heligoland (Introduced).

Oe. gauroides Hornem. Maryland; Virginia. Var. **brevicapsula** (Bartl.), comb. nov. (*Oe. brevicapsula* Cyb. Columb. **1:** 42. 1914.) Chevy Chase, Md.

Oe. ruderalis Bartl. Chevy Chase (Montgomery Co.), Baltimore, Md.; Washington, D. C.

Oe. parviflora L. South Harpswell, Me. Gray Herb.: Tacoma Park, D. C., 1902; Little Sands (King Co.), Prince Edward Island., 1914 (No. III33).

Oe. biennis L. Holland; Germany; Lancashire Coast, England (Introduced). Var. **cantabrigiana** (Davis), comb. nov. (*Oe. cantabrigiana* Davis. Genetics 25; 433–37. 1940.) England; Wales; Jersey. Var. **leptomeres** Bartl. Holland; Lüneberg, Germany.

The following are in subgenus *Raimannia: Oe. rhombipetala* Nutt. Minn. to N. Y., Mo., Neb., Ark., Texas. *Oe. heterophylla* Spach. Georgia to Texas. *Oe. Drummondii* Hook. Florida to S. Carolina and west to Texas. *Oe. humifusa* Nutt. New Jersey to Florida and Alabama. *Oe. laciniata* Hill. Maine to Virginia, Florida, Ohio, Kentucky, Texas and New Mexico.

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ADVENTIVE PLANTS IN NEW YORK

JOSEPH MONACHINO

THE following waifs, immigrants and escapes were collected in southern New York State and are, with one exception, represented by specimens deposited in the Herbarium of the New York Botanical Garden. The exception is *Aphaerema*, and this and *Pyrularia* were the only ones not collected by the writer. *Aphaerema*, *Photinia* and *Rorippa indica* (and of course the fungus), understandably enough, do not appear in either Fernald's "Gray's Manual of Botany" (1950) or Gleason's "The New Britton and Brown Illustrated Flora" (1952). It is definitely not recommended that these, or the New York find of *Pyrularia*, be entered in standard floras on the basis of the present record. Without further proof of naturalization, such singular discoveries should be regarded as merely casual stations, affording little more than first evidence of certain potentialities. The other species noted below suggest emendations, obviously of a minor nature, in one or both of the latest floras of the Northeastern United States.

Sarcosphaera ammophila (Dur. & Lév.) Seaver. *Monachino 517*, Fire Island, Long Island, Suffolk Co., N. Y., June 20, 1948; sand dunes, abundant over a long stretch (several miles) of shore; large collection made. *Monachino 518*, Gilgo State Park, east of Jones Beach, Long Island, Suffolk Co., N. Y., June 27, 1948; pure sand, a colony about 7 feet in diameter; about a mile further east several additional individuals seen. The writer showed this sand cup-fungus to Fred J. Seaver, who made a special trip to Fire Island to see and collect it for himself. The distribution given in Seaver's "North American Cup-fungi" (1942) is Florida to California and Michigan.

Cynosurus echinatus L. *Monachino 559*, grounds of the New York Botanical Garden, Bronx, N. Y. C., June 13, 1955; growing among awned and awnless forms of *Lolium multiflorum* Lam. with both smooth and

roughened upper culms. This species of dog's-tail appears in Fernald but not in Gleason.

Festuca gigantea (L.) Vill. *Monachino 555*, grounds of the New York Botanical Garden, Bronx, N. Y. C., June 22, 1955; abundant weed in one area. This fescue appears in Gleason but not in Fernald. The only previous New York record at the NYBG herbarium was the old Dobbs Ferry collection reported in the Bull. Torr. Bot. Club in 1881.

Pyrularia pubera Michx. *D. Giardano s. n.*, along Grand Central Parkway, near Cunningham Park, Queens, N. Y. C., May 21, 1954; spontaneous near *Rhododendron* and *Kalmia*. A staminate specimen was brought to me for identification by employees of the Park Department; it was thought by them to be "some kind of *Celastrus*." Surprising things sometimes appear among newly planted shrubs on highways and in parks. An outstanding example I recall (voucher not located) is *Aphaerema spicata* Miers, a flacourtiaceous subshrub native to southern Brazil, which was found in the Brooklyn Botanic Garden and referred to me for identification about sixteen years ago.

Amaranthus crispus (Lesp. & Thév.) A. Br. *Monachino s. n.*, Brooklyn, waste place in the vicinity of the Brooklyn Botanic Garden, N. Y. C., 1940; only fragment collected. Besides mine there is in the herbarium of NYBG no United States specimen of *A. crispus* collected less than half a century ago. I have not seen the species since 1940. The illustration for *A. crispus* in the New Britton and Brown is, at least in part, of *A. albus* L. The NYBG sheet of Olga Lakela 1714, Duluth, Minnesota, Aug. 16, 1936, distributed as *A. crispus*, used for the illustration and also as the basis for the "Duluth, Minn." record, is *A. albus*. The half utricle figured on the upper part of the illustration, presumably meant for *A. crispus*, shows clearly the circumscissile character and the sharp sepals of *A. albus*. The drawing of the utricle at the base of the habit sketch of a branch of the plant perhaps also indicates circumscission.

Rorippa indica (L.) L. H. Bailey. *Monachino 516*, grounds of the New York Botanical Garden, Bronx, N. Y. C., May 26, 1948; in grass by roadside near *Rhododendron* planting. Also collected by H. N. Moldenke in the same area on May 28, 1948, and May 16, 1949. I have not observed the plant on the grounds in recent years; matured siliques were not seen. My recollection is that a Moldenke specimen was sent to Reed C. Rollins for determination, but there is no note of this in the Herbarium nor in Dr. Moldenke's field book. Gleason lists the closely related *R. heterophylla* (Blume) Williams for New Jersey, "adventive in N. J. (Moldenke)." There is no voucher specimen in the Herbarium for this record.

Alchemilla microcarpa Boiss. & Reut. *Monachino 560*, Bayard Cutting Arboretum, near Great River station, Long Island, N. Y., June 18, 1955; large dense thriving colony. This species has not been previously reported north of Delaware and the District of Columbia. Its illustration in the New B. & B. shows glabrous, instead of hirtellous, leaf and stipule; the lobes of the stipule are drawn like those of *A. arvensis*

(L.) Scop., ovate, hardly longer than broad, much shorter than the entire portion, instead of "oblong, c. twice as long as broad, nearly as long as the entire portion." The quotation is from Clapham et al., "Flora of the British Isles" (1952), who regard the shape of the stipule-lobes important enough to be a key character in distinguishing this species from the closely related *A. arvensis*. It seems, however, that notwithstanding its inaccuracy the illustration was correctly based on *A. microcarpa* (probably *R. M. Harper 2307*, Athens, Georgia).

Photinia villosa (Thunb.) DC. *Monachino s. n.*, near High Bridge, Manhattan, N. Y. C., May 16, 1953; on a rocky incline, among native species in woodland. *Monachino 563*, from same shrub, June 3, 1956. *Monachino 571*, from a different shrub some distance away, June 10, 1956. Another shrub was seen at the furthest end of the woodland strip, but was not in flower. No fruits or seedlings were found. The *Photinia* was growing sufficiently removed from habitation or plantings to justify being recorded. As commonly known, *P. villosa* is not too rare in cultivation in N. Y. C. There is nothing remarkable about seeing self-sown young plants growing closely around their cultivated parent shrubs and trees. Some examples of this are *Albizzia*, *Laburnum*, *Cedrela*, *Halesia* ("often cult. and occasionally spreading" Fernald), *Styrax*, *Symplocos*, *Callicarpa*, *Clerodendron*. These rarely go far from their parents, and it is difficult to predict whether they will eventually become members of our wild flora. *Phellodendron*, completely disregarded by Gleason, is one that is sure to do so; in fact it already has, but is almost sure to become more wide-spread. It grows with the rapacity of *Ailanthus*, and finds a better footing in the woodlands than does *Ailanthus*. In the New York Botanical Garden grounds, the cork-tree has invaded the Hemlock Forest and competes successfully in the shade and in the open; it can be seen in various stages of development up to fruiting adults. Sometimes a great multitude of seedlings can be observed growing together. They are readily identified by their oval cotyledons which have finely crenulate margins and a clear translucent gland at each sinus. The fruit is a pungent drupe; when the flesh is removed the bony endocarps or stones upon drying snap open by themselves, like follicles. The seeds germinate very easily.

Dolichos lablab L. *Monachino s. n.*, Croton Aqueduct, Westchester Co., N. Y., Oct. 18, 1953; flowers purple. The hyacinth bean has been reported on the Atlantic border only as far north as the District of Columbia.

Anthriscus sylvestris (L.) Hoffm. *Monachino 554*, Croton Aqueduct, Westchester Co., N. Y., June 6, 1954; observed here for many years. The only previous United States specimen at the N. Y. Bot. Gd. was one collected by N. L. Britton on Staten Island in 1895. This species is mentioned here because it grew in such prolific numbers; it formed a dominant plant for quite a stretch of ground and proved itself highly competent to survive strong competition.

Solanum sarachoides Sendt. *Monachino 176*, Flushing, Long Island,

N. Y. C., Sept. 17, 1936; large stand in a waste place. My specimen is the only one from the eastern United States in the NYBG herbarium. This collection was the basis for the "*Solanum villosum*" record in Torreya **40:** 83 (1940).—NEW YORK BOTANICAL GARDEN.

NOTES ON ILEX

GABRIEL EDWIN

THREE changes in the status of taxa, now more or less commonly accepted, are suggested:

1. **Ilex longipes** Chapm. in Trelease, Trans. Acad. Sci. St. Louis **5:** 346. 1889. *I. collina* Alexander, Castanea **6:** 30. 1941.

Alexander proposed *I. collina* as differing from *I. longipes* in coloration of the lower leaf surface, position and size of the leaf-teeth, presence or absence of glands on these teeth, the depths of grooving of the nutlets, and the size and coloration of the fruit. He stated that *I. collina* is most closely related to *I. montana* Torrey and Gray. Woods (Castanea **10:** 126–127, 1951) indicated that the grooving of the nutlets may be less pronounced than described by Alexander, and that the affinities of *I. collina* lie closest to *I. verticillata* (L.) Gray, citing similarities of leaf venation, thickness and number of marginal teeth on the leaves and the shape of the calyx lobes. He also extended the range of *I. collina* from Randolph County, West Virginia to Smythe County, Virginia.

The depth of the grooves on the nutlets of the various taxa in native *Ilex* varies greatly within a species as well as between species and Woods was fully justified in dismissing this character as non-diagnostic.

The number of eciliate calyx lobes in *I. collina* is never greater than six. The usual number in *I. verticillata* is eight. Also, the shape, size and coloration of the leaves separate *I. collina* from *I. verticillata*. It differs from *I. montana* in the length of the pedicels, absence of fruiting spurs, which may also be absent from *I. montana* at times, and in the lack of hairs or cilia on the calyx. The leaves of *I. montana* are larger, darker and more chartaceous.

However, it is very difficult to distinguish *I. collina* from *I. longipes*.

The leaf margins of *I. longipes* may bear only cilia. However, they may also be almost wholly eciliate and slightly glandular, as in the specimens of *Demaree 15663*, Arkansas and *R. M. Harper*, April 4, 1936, Alabama. The Harper specimen displays a slightly more glandular condition. *Alexander, Everett and Pearson*, Alabama, Oct. 3, 1933, has sinuate-margined leaves with few cilia and almost no glands. The collection of *R. A. Dixon 432*, Madison Co., Texas, has eciliate leaf margins but about half the extensions of the veins are gland-tipped. An old Chapman collection from the mountains of Georgia is both ciliate and glandular.

The ciliate-glandular condition is the more prevalent one in *I. longipes*, while the type sheets of *I. collina* are glandular and eciliate. But this glandular-eciliate condition as discussed is not confined to *I. collina*, merely more pronounced. It may possibly indicate change which could lead to speciation, but at present this is merely conjecture. The variation from sinuate margins to ciliate to glandular-ciliate to glandular is haphazard and apparently without pattern except at the edges of the *I. longipes* range. The Texas specimen cited above, the only collection from that state seen thus far, is not typical of either *I. longipes* or *I. collina*. Very possibly it is a local southwest phase similar to that of Virginia-West Virginia which up to the present has been considered to be *I. collina*. No clear break in the continuity of *I. longipes* can yet be seen.

I. longipes and *I. collina* do not differ in size of fruit. Those of *I. longipes* vary from 5 to 9 mm. in diam., a range which includes that of *I. collina*. Fruit color in all native hollies often differs with the individual plants of a species so that any red-fruited holly species displays several shades of red. Each holly fruit color should be stated as a range (i.e.) scarlet to a lighter red for more accurate description. The colors of the fruits in *I. longipes* and *I. collina* readily fall into the same range.

The color of the foliage is another variable characteristic not only in the hollies here considered but throughout the genus. A distinction between "light green beneath" and "yellow-green beneath" seems to me to be untenable especially when there is great variability of this character as in those collections of *I. collina* cited by both Alexander and Woods.

In the general run of collections of *I. longipes*, the extent to which the leaf venation is impressed is closer to that of *I. verticillata* than to that of the type sheets and to some of the collections considered by Woods to be *I. collina*. Nevertheless, taking the collections as a whole, there is no real difference in venation between the sheets heretofore considered *I. collina* and those called *I. longipes*. The very numerous collections of the extremely plastic *I. verticillata* exhibit considerable diversity in the extent to which the leaf venation is impressed.

For the above stated reasons *I. collina* does not warrant recognition as a distinct taxon and is reduced to the synonymy.

2. **Ilex longipes** f. **van-trompii** Brooks, Castanea **5:** 15. 1940 (as *vantrompi*). *I. collina* f. *van-trompii* (Brooks) Core and Davis, Proc. W. Va. Acad. Sci **16:** 39. 1944 (as *Vantrompii*).

With the reduction of *I. collina* to the synonymy of *I. longipes*, the yellow-fruited plants formerly considered to be a form of *I. collina* are recognized under *I longipes* where Brooks first placed them.

3. **Illex verticillata** (L.) Gray. *I. verticillata* var. *padifolia* (Willd.) T. & G.

Var. *padifolia* has long been recognized as a morphologically distinct entity, differing from *I. verticillata* on the basis of leaf-pubescence. The typical form is glabrous or bears trichomes only on the veins of the lower leaf-surface, while the variety has trichomes on the tissue as well as the veins.

A careful study of over 1000 herbarium sheets of the verticillata complex strongly indicates that var. *padifolia* is not distinct from typical *verticillata*. As suggested by Trelease in Gray's Synoptical Flora (1897), "the original *Prinos padifolius* Willd. (Enum. 394) is scarcely more than the common form of *I. verticillata*."

The collection of *William H. Leggett*, July 9, 1870, at Carlstadt, New Jersey, displays the pubescence of typical *I. verticillata* on the upper leaves and that of var. *padifolia* on the lower leaves of the same branchlet. One of the lower leaves shows an example of var. *padifolia* pubescence in the extremely dense condition. The collection of *L. H. Pammel & V. C. Fish 424*, Houghton, Michigan, shows the pubescence of var. *padifolia*,

the typical *verticillata* and an intermediate condition all on one branchlet.

The many borderline cases between the two constitute further evidence that there are two names for one entity. Among collections showing this are *H. A. Gleason & H. A. Gleason, Jr.*, July 3, 1953, Michigan; *R. W. Chaney 201*, Michigan; *C. C. Deam*, Indiana, July 11, and Sept. 20, 1903. All specimens cited are from the herbarium of the New York Botanical Garden.

It should be indicated here that other described varieties of *I. verticillata* may not be distinct taxa, but to determine this, further study is required.

Ilex ambigua (Michx.) Chapm. f. **channellii** forma nova.

Ramuli puberuli pilis brevibus mollibus albis; folia saepius minora, lamina 2.4–4. cm. longa. Differs from the typical form in having the branchlets puberulent with short, soft, white hairs; leaves up to 4 cm. long, but mostly shorter.

The three collections thus far seen are from small trees, about 10 feet high.

TYPE: *R. B. Channell 2440*, Jackson County, Mississippi, about 1½ miles west of Alabama State Line, about 3½ miles N. of Pecan and about 1½ miles N. of U. S. 90, 16 Aug. 1953. (US, ISOTYPE Duke). *Channell 2416*, Jackson Co., Miss. *Channell 2422*, Jackson Co., Miss.—HERBARIUM, U. S. NATIONAL ARBORETUM, BELTSVILLE, MARYLAND.

WHITE-FLOWERED FORMS OF LIATRIS AND VERNONIA.—In the Chicago region two white-flowered forms, one in *Liatris cylindracea* Michx., the other in *Vernonia missurica* Raf., have been discovered within the past three years. Since other white-flowered forms have been recognized in these two genera, it is in keeping with consistency to record the present ones previously undescribed. It affords me great pleasure to associate the names of these plants with their discoverers, Mr. Floyd A. Swink and Mr. Karl Bartel, keen students of the flora of the Chicago region.

Liatris cylindracea Michx., forma **Bartelii** Steyermark, f. nov.—A varietate *cylindracea* recedit floribus albidis.—Indiana: lake sand along

side road, Clark Road, northwest of Gary, Lake County, August 13, 1955, *Karl E. Bartel* (HOLOTYPE in Chicago Natural History Museum Herbarium).

In her monograph of the genus *Liatris* Dr. Gaiser states, "Though no report in the literature has been found of white-flowered plants of this species, one large plant was found, Aug. 21, 1940, by the writer, no. 213, at Turkey Point, Oxford Co., Ont. (G), adding one more species to the list in which albinos exist. As was frequently experienced after transplantation, the albino died at the end of the next flowering season, though other individuals persisted several years longer."[1]

Originally, one plant was found by Mr. Bartel in bloom on August 9, 1953. This plant did not bloom in 1954, but in 1955 two plants were seen six feet north of the location of the 1953 plant. Dr. John W. Thieret of the department of Botany at the Chicago Natural History Museum found several plants of this albino form during 1955 at the same station, but, owing to the rarity of the white-flowered form, did not preserve an herbarium specimen.

Vernonia missurica Raf., forma **Swinkii** Steyermark, f. nov.—A varietate *missurica* recedit floribus albidis.—Illinois: prairie south of 95th Street and west of U. S. Route 45 in Argonne Forest Preserve south of Willow Springs, Cook County, August 11, 1955, *Floyd A. Swink 2775* (HOLOTYPE in Chicago Natural History Museum Herbarium).

Mr. Swink is on the staff of the Department of Pharmacognosy and Pharmacology of the College of Pharmacy at the University of Illinois in Chicago, and has been a keen student of the local flora all his life. His unique book[2] testifies to his unusual knowledge and mastery of the flora of the Chicago region.—JULIAN A. STEYERMARK, CHICAGO NATURAL HISTORY MUSEUM AND MISSOURI BOTANICAL GARDEN.

Volume 58, no. 696, including pages 335–369, was issued 23 January, 1957.

[1] GAISER, L. O. The Genus Liatris. RHODORA **48**: 381. 1946.

[2] SWINK, FLOYD A. A guide to the Wild Flowering Plants of the Chicago Region. 160 pp. Rockrose Press, Inc. Chicago, Ill. 1953.

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